

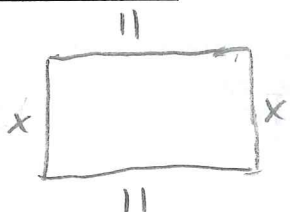
Drawing Diagrams to Solve Problems

DIRECTIONS: Draw a diagram to solve each of the following problems. Then use what you know about perimeter, circumference, and area to solve the problem.

- ① You will need 36 feet of fencing to enclose a rectangular garden. If the length of the garden is 11 feet, what is the width? 7 ft = x

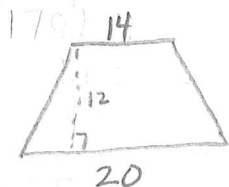
$$\begin{array}{r} 36 = 2x + 22 \\ -22 \quad -22 \\ \hline 14 = 2x \end{array}$$

$$\frac{14}{2} = \frac{2x}{2} \quad x = 7$$



$$11 + 11 + 7 + 7 = 36 \text{ feet}$$

- ② A homeowner is building a trapezoidal brick patio and needs to determine its total area. The bases measure 14 feet and 20 feet. The distance between the bases is 12 feet. What is the area of the patio in square feet? 204 ft²



$$A = \frac{(b_1 + b_2)h}{2}$$

$$A = \frac{(14 + 20)12}{2}$$

$$A = \frac{34(12)}{2}$$

$$A = \frac{408}{2}$$

$$A = 204 \text{ ft}^2$$

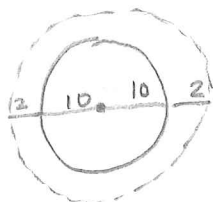
- ③ A circular above-ground pool has a diameter of 20 feet. You want to purchase a cover for the pool. What area needs to be covered? Round your answer to the nearest square foot.

314 ft²



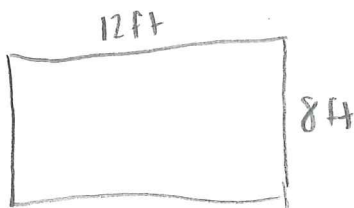
$$\begin{aligned} A &= \pi r^2 \\ &= 3.14 \cdot 100 \\ A &= 314 \text{ ft}^2 \end{aligned}$$

- ④ If you want the pool cover from the above problem to hang 2 feet over the pool, in all directions, what would be the total area of the pool cover? 452.16 ft²



$$\begin{aligned} A &= \pi r^2 \\ &= 3.14 \cdot 12^2 \\ &= 3.14 \cdot 144 \\ A &= 452.16 \text{ ft}^2 \end{aligned}$$

- ⑤ A rectangular dog run measures 12 feet by 8 feet. How many square feet of cement will be needed to cover the dog run? 96 ft²



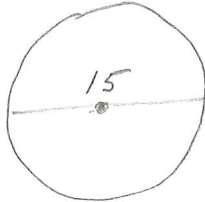
$$\begin{array}{r} 12 \\ \times 8 \\ \hline 96 \end{array}$$

$$A = bh$$

$$A = 12 \cdot 8$$

$$A = 96 \text{ ft}^2$$

6) A circular pillow has a diameter 15 inches. If I wanted to sew ribbon all along the edge of the pillow and across the center, how many inches of ribbon would I need? 62.1 in total



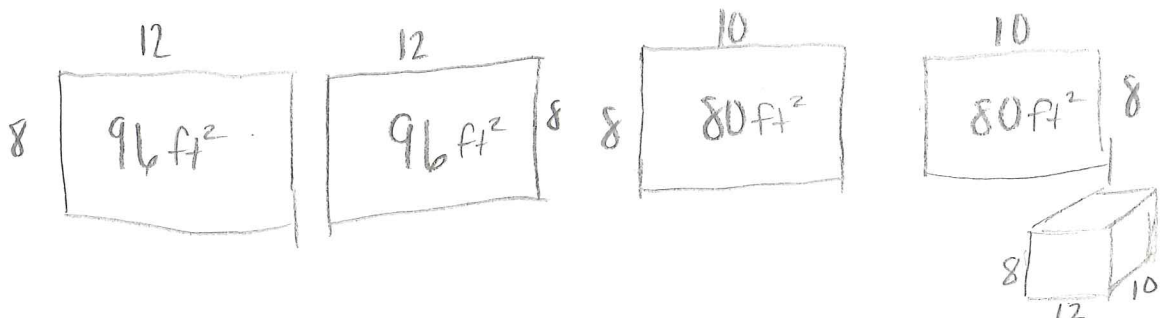
$$C = \pi d$$

$$= 3.14 \cdot 15$$

$$= 47.1 \text{ in}$$

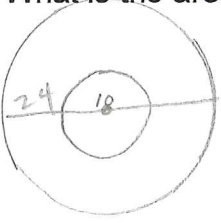
$$\begin{array}{r} 47.1 \\ + 15 \\ \hline 62.1 \text{ in} \end{array}$$

7) Jackie is painting a room. Two of the walls measure 12 feet by 8 feet and the other two walls measure 10 ft. by 8 feet. If a can of paint will cover 300 square feet, how many cans of paint should Jackie buy? 2 cans



$$\begin{array}{r} 96 \\ 96 \\ 80 \\ + 80 \\ \hline 352 \text{ ft}^2 \end{array}$$

8) An artist is creating a wall hanging that is shaped like a doughnut. The large circular shape has a diameter of 24 inches. The hole that is cut from the center has a diameter of 10 inches. What is the area of the completed wall hanging? 373.66 in²



$$A = \pi r^2$$

$$= 3.14 \cdot 12^2$$

$$= 3.14 \cdot 144$$

$$= 452.16 \text{ in}^2$$

(LARGE)

$$A = \pi r^2$$

$$= 3.14 \cdot 5^2$$

$$= 3.14 \cdot 25$$

$$= 78.5 \text{ in}^2$$

(small)

$$\begin{array}{r} 452.16 \\ - 78.50 \\ \hline 373.66 \text{ in}^2 \end{array}$$

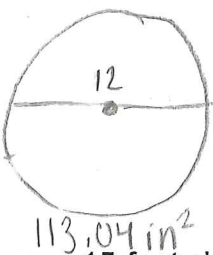
9) A small pizza has a diameter of 10 inches, and a medium has a diameter of 12 inches. How much more pizza do you get with the medium pizza? 34.54 in² more

$$A = \pi r^2$$

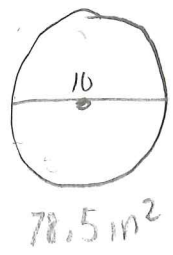
$$= 3.14 \cdot 36$$

$$= 113.04$$

$$\begin{array}{r} 3.14 \\ \times 36 \\ \hline 1884 \\ 9420 \\ \hline 113.04 \end{array}$$



$$113.04 \text{ in}^2$$



$$78.5 \text{ in}^2$$

$$A = \pi r^2$$

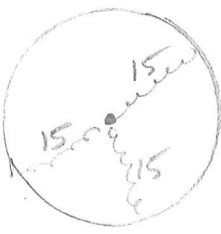
$$= 3.14 \cdot 25$$

$$A = 78.5$$

$$\begin{array}{r} 113.04 \\ - 78.50 \\ \hline 34.54 \end{array}$$

$$\begin{array}{r} 3.14 \\ \times 25 \\ \hline 1570 \\ 6280 \\ \hline 78.50 \end{array}$$

10) A dog is on a 15-foot chain that is anchored to the ground. How much area can the dog cover while he is on the chain? 706.5 ft²



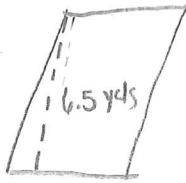
$$A = \pi r^2$$

$$= 3.14 \cdot 15^2$$

$$= 3.14 \cdot 225$$

$$= 706.5 \text{ ft}^2$$

11) The area of a parallelogram is 58.5 square yards. If the height of the parallelogram is 6.5 yards, what is the base? 9 yds (Write the formula first, then use algebra to solve)



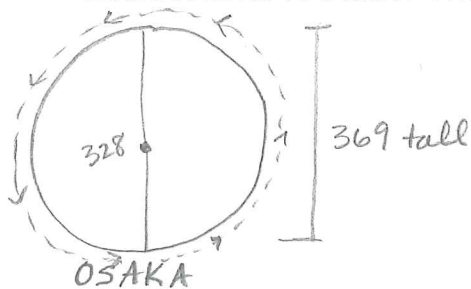
$$A = b \cdot h$$

$$= ? \cdot 6.5$$

$$\begin{array}{r} 9 \\ 65 \overline{) 585} \end{array}$$

$$\begin{array}{r} 4 \ 65 \\ \times \ 9 \\ \hline 5 \end{array}$$

12) The world's tallest Ferris wheel is in Osaka, Japan, and stands 369 feet tall. Its wheel has a diameter of 328 feet. If a ride on the Ferris wheel makes 6 complete revolutions, how far will you have traveled when the ride is finished? 1.2 miles (Round your answer to the nearest tenth of a mile. Remember 5280 feet = 1 mile)



$$C = \pi d$$

$$= 3.14 \cdot 328$$

$$C = 1029.92 = 1 \text{ full rotation}$$

$$\begin{array}{r} 1029.92 \\ \times \quad 6 \\ \hline \end{array}$$

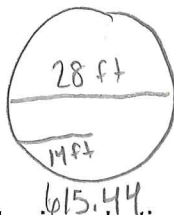
$$6179.52 \div 5280 = 1.17 \text{ miles}$$

13) A high school wrestling mat is a circle with a 28 foot diameter. A NCAA college wrestling mat is a circle with a 32 foot diameter. How much larger is the college mat? 188.40 ft

$$A = \pi r^2$$

$$= 3.14 \cdot 14^2$$

$$= 615.44$$



$$= \pi r^2$$

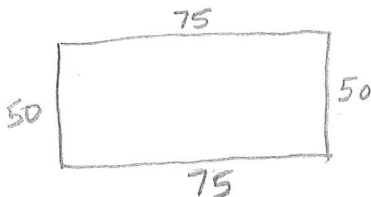
$$= 3.14 \cdot 256$$

$$= 803.84$$

14) A rectangular ice-skating rink measures 50 ft by 75 ft.

a. If it costs \$4.50 per foot to build a railing, how much would it cost to completely enclose the rink with a railing? \$1125.00

b. If the skating rink allows one person for every 10 ft² of ice, how many people are allowed in the rink at one time? 375 people



$$\text{Perimeter} = 250$$

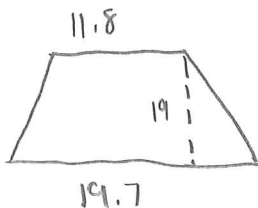
$$\begin{array}{r} \times 4.50 \\ \hline \$1125.00 \end{array}$$

$$A = b \cdot h$$

$$= 75 \cdot 50$$

$$= 3750 \text{ ft}^2 \div 10 = 375$$

15) The key on the court of the International Basketball League is shaped like a trapezoid. The free throw line is 11.8 feet in length. The base line measures 19.7 feet. The distance between the free throw line and the base line is 19 feet. What is the overall size of the key in the International Basketball League? 299.25 ft²



$$A = (b_1 + b_2) \cdot h \div 2$$

$$= (11.8 + 19.7) \cdot 19 \div 2$$

$$= 31.5 \cdot 19 \div 2$$

$$= 598.5 \div 2$$

$$= 299.25$$

